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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,415	03/17/2004	Dai Kimura	7052042001	3866

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WASHINGTON, DC 20006

EXAMINER	
CUMMING, WILLIAM D	
ART UNIT	**PAPER NUMBER**
2617	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/07/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/802,415	DAI KIMURA	
	Examiner	Art Unit	
	WILLIAM D. CUMMING	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-7 and 11-18* is/are allowed.

6)☐ Claim(s) *8 and 10* is/are rejected.

7)☐ Claim(s) *9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "*the list may not be incorporated into the specification but must be submitted in a separate paper.*" Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Specification

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 8 and 10 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by **Kim, et al.**

Kim, et al disclose a radio communication apparatus (figure 4) in a radio packet communication system ("*A transmission/reception apparatus and method for performing packet retransmission considering a channel environment in a CDMA mobile communication system. Upon receiving a retransmission request from a receiver, the apparatus and method selects a modulation type to be used according to a condition of a transmission channel, and changes the previously used puncturing pattern in order to output the proper number of coded bits for the selected modulation type.*")

for feeding back radio link quality information, which has been measured on a packet receiving side, to a transmitting side and adaptively controlling a modulation scheme and/or encoding rate on the transmitting side using the quality information (*"AMCS is a technique for adaptively changing a modulation type and a coding rate of a channel encoder according to a variation in the downlink channel environment. Commonly, to detect the downlink channel environment, a UE measures a signal-to-noise ratio (SNR)*

and transmits the SNR information to a Node B over an uplink. The Node B predicts the downlink channel environment based on the SNR information, and designates proper modulation type and coding rate according to the predicted value. The HSDPA and 1xEV-DV consider using the modulations of QPSK (Quadrature Phase Shift Keying), 8PSK (8-ary Phase Shift Keying), 16QAM (16-ary Quadrature Amplitude Modulation) and 64QAM (64-ary Quadrature Amplitude Modulation), and the coding rates of 1/2 and 3/4. Therefore, an AMCS system applies the high-order modulations (16QAM and 64QAM) and the high coding rate 3/4 to the UE located in the vicinity of the Node B, having a good channel environment, and applies the low-order modulations (QPSK and 8PSK) and the low coding rate 1/2 to the UE located in a cell boundary. In addition, compared with the existing high-speed power control method, AMCS decreases an interference signal, thereby improving the average system performance"), comprising:

estimating means for estimating throughput on the packet receiving side ("*A second method is to determine the modulation type at a transmitter. In this method, the transmitter independently estimates a condition of the transmission channel and determines a modulation type according to the estimated condition of the transmission channel. When using this method, the retransmission controller 424 extends its role to a process of estimating the condition of the transmission channel. The condition of the transmission channel can be estimated by the HARQ control signal provided from the receiver. The transmitter informs the receiver of the determined modulation type so that the receiver can cope with the data transmitted according the changed modulation type.*" Control means for adaptively controlling a target error rate so as to maximize the

throughput ("*Referring to FIG. 1, the channel encoder 112 is comprised of an encoder and a puncturer. When input data that is proper to a data rate is applied to an input terminal of the channel encoder 112, the encoder performs encoding in order to decrease a transmission error rate. The puncturer performs puncturing on the coded bits from the encoder according to a puncturing pattern. The puncturing pattern is provided from a puncturing pattern selector 120 according to a coding rate and a modulation order previously determined by a controller 122. The coded bits punctured by the puncturer are serially provided to an interleaver 116. The interleaver 116 interleaves the punctured coded bits. The interleaver 116, a device for coping with fading that occurs in a radio channel, disperses bits constituting one information word (e.g., one word of a voice signal) thereby to decrease a probability that one information word will be lost at the same time. The interleaved signal by the interleaver 116 is modulated by the modulator 118 by a given symbol mapping method, and transmitted over a radio channel. The symbol mapping method performed in the modulator 118 is determined according to a modulation type previously determined by the controller 122. Further, a rate matcher 114 is illustrated in FIG. 1. The rate matcher 114 performs rate matching to the number of bits transmitted over a physical channel by performing puncturing or repetition on systematic bits and parity bits provided from the channel encoder 112.*"). Means for deciding a modulation scheme and/or encoding rate, in such a manner that average error rate of a packet becomes equal to the target error rate, using the radio link quality information as well as reception success/failure information reported by the packet receiving side ("*A detailed structure of a turbo encoder used as*

the channel encoder 112 of FIG. 1 is illustrated in FIG. 2. Referring to FIG. 2, the channel encoder 112 includes encoders 212 and 214 with a mother coding rate 1/6, and a puncturer 216. It is well known that a channel coding technique using the turbo encoder shows performance closets to the Shannon limit in terms of a bit error rate (BER) even at a low SNR. Therefore, in the 3GPP and 3GPP2 carrying out standardization on the future mobile communication system for high-speed multimedia data transmission with high reliability, the turbo encoder is adopted as a standard channel encoder of the HSDPA and the 1xEV-DV."); and means for transmitting a packet based upon the modulation scheme and/or encoding rate decided ("*According to a first aspect of the present invention, there is provided a method for generating a retransmission puncturing pattern matrix in order to transmit a packet unit including a stream of symbols and another stream of symbols according to a first modulation type and a second modulation type in response to a retransmission request from a receiver, in a mobile communication system puncturing coded bits from an encoder according to a first puncturing pattern matrix based on the first modulation type, and transmitting a packet unit including a stream of symbols obtained by symbol mapping the punctured coded bits by the first modulation type, from a transmitter to the receiver. The method comprises: calculating the number of bits per a puncturing pattern matrix, to be increased or decreased, by multiplying a difference B.sub.N-B.sub.0 between the number B.sub.N of coded bits that can be mapped to one symbol by the second modulation type and the number B.sub.0 of coded bits that can be mapped to one symbol by the first modulation type, by the number B of symbols mapped to bits that are*

not punctured according to the first puncturing pattern matrix based on the first modulation type; generating a second puncturing pattern matrix based on the number of bits per the puncturing pattern matrix; and generating the retransmission puncturing pattern matrix by combining the first puncturing pattern matrix with the second puncturing pattern matrix.")

Allowable Subject Matter

6. Claims 1-7 and 11-18 are allowed.

7. As allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).

8. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record does not disclose or make obvious the claimed radio communication apparatus in a radio packet communication system for feeding back radio link quality information, which has been measured on a packet receiving side, to a transmitting side and adaptively controlling a modulation scheme and/or encoding rate on the transmitting side using the quality information, comprising an estimating means for estimating a variation-with-time characteristic of the radio link quality using the radio link quality information reported by the packet receiving side. The changeover means for adaptively changing over a target error rate using the variation-with-time characteristic. The deciding means for deciding a modulation scheme and/or encoding rate, in such a manner that packet error rate becomes equal to the target error rate, using the radio link quality information as well as reception success/failure information reported by the packet receiving side. and the means for transmitting a packet based upon the modulation scheme and/or encoding rate decided.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Yoshida, et al disclose an encoding apparatus and decoding apparatus.

Li discloses an ARQ parameter negotiation in a data packet transmission system using link adaptation.

Kim, et al show an apparatus and method for distributing power in an HSDPA system.

If applicants wish to request for an interview, an *"Applicant Initiated Interview Request"* form (PTOL-413A) should be submitted to the examiner prior to the interview in order to permit the examiner to prepare in advance for the interview and to focus on the issues to be discussed. This form should identify the participants of the interview, the proposed date of the interview, whether the interview will be personal, telephonic, or video conference, and should include a brief description of the issues to be discussed. A copy of the completed *"Applicant Initiated Interview Request"* form should be attached to the Interview Summary form, PTOL-413 at the completion of the interview and a copy or applicant's representative.

11. Electronic Notification of Outgoing Correspondence (e-Office Action)

Effective December 16, 2006, the United States Patent and Trademark Office (Office) will begin a pilot program to provide a limited number of Private PAIR users with the option of receiving electronic notification of some outgoing correspondence related to their US patents and US national patent applications retrievable through Private PAIR instead of a paper mailing of the correspondence. Patent Cooperation Treaty (PCT) applications will not be included in this pilot.

Participants in this pilot program will no longer receive paper mailings for most correspondence originating from a Technology Center. However, since several areas of the Office have independent mailing processes, pilot participants will continue to receive paper mailings for correspondence originating from several areas of the Office including, but not limited to: Office of Initial Patent Examination, Petitions, PCT, Appeals, Publications, Interference, and Reexamination.

A Private PAIR user will be able to opt-in to receive electronic mail message (email) notifications of outgoing correspondence by selecting the appropriate choice on

the Customer Number Details screen for a customer number associated with a correspondence address after logging in to Private PAIR and providing between one and three email addresses to be used for these notifications. The Private Pair user must be a registered patent attorney or agent of record, or a pro se inventor who is a named inventor in the application associated with the customer number through which Private PAIR is accessed, The Office will then send a notification to each provided email address if a new outgoing correspondence has been prepared for the patents or patent applications associated with the user's Customer Number. Each email notification will list all applications, associated with the corresponding Customer Number, in which new outgoing correspondence was prepared for the corresponding electronic application files within the preceding 24 hours. Each email notification will be entered into the corresponding application files. The new outgoing correspondence will become available for viewing and downloading through Private PAIR within two business days of the date of the email notification.

Applicants will have the ability to opt-in or opt-out of receiving electronic notification of Office actions at any time. However, the status of each individual outgoing correspondence, whether electronic or paper, will be determined at the time of the printing of the form PTOL-90 cover sheet (at the time the outgoing correspondence becomes available for viewing, i.e., the date indicated on the correspondence).

The email notification described above will be sent after the Office action has been prepared and entered into the record. The period for reply to any Office correspondence to which a reply is required will commence on the date indicated on the outgoing Office such outgoing correspondence for all other purposes (e.g., 37 CFR 1.71(g)(2), 1.97(b), 1.701 through 1.705). The Office communication will become available for downloading and viewing through Private PAIR on the date indicated on the correspondence.

If none of the documents in each of the applications listed in the email notifications are viewed or downloaded through Private PAIR within seven calendar days after the emails are sent, a courtesy postcard notifying the applicant of the availability of electronic Office action will be mailed to the correspondence address associated with the applicant's corresponding Customer Number for each of those applications. The mailing of a courtesy postcard will not restart the time period for reply, and the period for reply to any outgoing Office correspondence to which a reply is required will continue to be measured from the date indicated on such outgoing Office correspondence.

Please note that the email notification procedure outlined above is simply an automated email sent by the Office to alert applicant that an official Office correspondence has been entered in the official record that will be available for viewing via private PAIR. It is not an email sent by the examiner and does not alter the Office policy prohibiting an applicant or examiner from engaging in improper email correspondence. See MPEP section 502.03.

The e-Office Action Pilot Program will begin with a limited number of participants. The Pilot Program will last approximately six months. Upon the conclusion of the pilot program the success of the pilot will be evaluated. At that time decisions will be made

as to whether or not to make modifications to the e-Office action program and whether or not to permanently implement the program.
Thus, if the pilot program is successful and a decision is made to permanently implement the program, it is expected that the e-Office Action Program will go into full production sometime around June 2007 at which point the program will be open to all users (registered patent attorney or agent of record, or a pro se inventor who is a named inventor in the application associated with the customer number through which Private PAIR is accessed) having a Customer Number and access to Private PAIR.

For further information please contact the Patent Electronic Business Center (EBC) 866-217-9197 (toll-free) or 571-272-4100 Monday through Friday from 6 a.m. to 12 Midnight Eastern Time or send e-mail to ebc@uspto.gov
Date 12/19/2006

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **WILLIAM D. CUMMING** whose telephone number is 571-272-7861. The examiner can normally be reached on Monday-Thursday 11am-8:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Appiah can be reached on 571-272-7904. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

13. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

WILLIAM D. CUMMING
Primary Examiner
Art Unit 2617